

### **Abstract**

The invention relates to the field of microbial technology. It discloses a method to apply the cloud point system (CPS) in biotransformation by selecting one or more types of nonionic surfactant to form a aqueous system with a cloud point below the microbial transformation temperature, which serves as transformation medium. The method disclosed is suitable in particular for microbial transformation of hydrophobic compounds, for the system where substrate or product inhibits microbial growth or where product is further degraded by microbes. The CPS in the present invention forms a microemulsion of water-in-oil and oil-in-water, where the drops of surfactant is able to solubilize, serving as substrate reservoir and product extractant. This enhances bioavailability of substrates and elimination of product inhibition. The large water vesicles existing in the continuous surfactant phase provide aqueous environment to the cells where they can be sheltered from detrimental effects of surfactants, resulting in improvement of biocompatibility.